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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/089,470	03/20/2002	David Robert Diggins	025265-227	9637

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EXAMINER
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CHAN, SING P

ART UNIT	PAPER NUMBER
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1734

DATE MAILED: 04/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/089,470

Applicant(s)

DIGGINS ET AL.

Examiner

Sing P. Chan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 41-57 and 81-106 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 41-57 and 81-106 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 104-106 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Claim 104 recites the limitations "the intermediate coating layer" in line 18 and "the abrasion resistance coating layer" in line 19. There is insufficient antecedent basis for these limitations in the claim.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 41-54, 81-85, 88-94, 97, 98, 102, and 103-106 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soane et al (U.S. 5,733,483) in view of Konishi et al (U.S. 5,462,806).

Regarding claims 41, 50-52, and 103-106, Soane et al discloses a method of forming optical elements, i.e. lens. The method includes providing a mold and coating

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with the optical coating, a coupling agent, i.e. a primer, comprising methacryloxypropyltrimethoxysilane (Col 6, lines 39-43), which is a specific example of a broader methacryl silane, and the desired liquid optical material (Col 11, lines 17-35), which is a thermoset such as acrylate or mixture of acrylate and urethane (Col 8, lines 56-66) is supplied to the mold with a coupling agent layer, i.e. primer, which with baking causes hydrolysis reactions to chemically bond, i.e. coreacting, to the other layers (Col 6, lines 26-26) and cured or solidified. (Col 4, lines 14-20, Col 5, line 61 to Col 6, line 12, and Col 8, lines 57-64) Furthermore, Soane et al discloses the optical coatings can be applied in any desired combination to the mould. (Col 4, lines 28-30) Soane et al is silent as to the primer coating is provided between the lens material and a hard coating. However, providing the primer coating between the lens material and the hard coating is well known and conventional as shown for example by Konishi et al. Konishi et al discloses a method of forming plastic lens. The method includes providing a primer and hard coating layers comprising acrylic acid, vinyl acetate, polyester, silicone, polyurethane, or epoxy resins (Col 2, line 62 to Col 3, line 5 and Col 3, line 53 to Col 4, line 36) and includes a number examples of organosilicon compound such as methacryloxypropylmethyldimethoxysilane (Col 5, lines 43-44), which is a specific example of (meth)acryl silane or glycidoxypopyltrimethoxysilane (Col 4, line 59), which is considered to form network by ring opening of the glycidoxy portion and forming the primer layer between the hard coating layer and the lens material (Col 1, lines 31-35). Furthermore, the hard coating layer is formed of silicone resin, which is polysiloxane resin (Col 7, lines 51-56).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a primer layer between the hard coating layer and the lens material with polysiloxane resin as the material for the hard coating layer as disclosed by Konishi et al in the method of Soane et al, which provide a lens with excellent scratch and impact resistance. (See Konishi et al, Col 1, lines 44-49)

Regarding claim 42, Soane et al discloses the all the coatings are applied to the mold by spin coating or dipping, which completely cover the casting face. (Col 5, lines 40-47, Col 5, lines 54-60, Col 6, lines 39-43)

Regarding claim 43, Soane et al discloses each layer is cured, which is considered to be a film and is insoluble is immersed in a hard coat solution and is inherently to be aberration-free and replicates the casting face of the mould. (Col 10, lines 10-34)

Regarding claim 44, Soane et al discloses coating and curing the coatings to the affective degree of crosslinking for storing and shipping for later use. (Col 10, lines 10-29)

Regarding claim 45, Soane et al discloses the curing or drying is performed at 80°C for 30 minutes. (Col 6, lines 39-49)

Regarding claims 46 and 47, coating layers as disclosed by Soane et al contain an unsaturated monomer range of 5% to 40% or 10% to 80%. (Col 2, lines 48-56)

Regarding claims 48 and 49, Soane et al discloses the curing or drying is initiated by heating or ultraviolet light irradiation. (Col 5, lines 10-15)

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Regarding claims 53 and 54, Soane et al discloses the coating includes a solvent and curing is considered to include removal of the solvent by heating. (Col 6, lines 39-58)

Regarding claims 81-85, Soane et al discloses additional coating of anti-reflection coatings be applied prior to the first or hard coating has been applied. (Col 5, line 61 to Col 6, line 12)

Regarding claims 88-92, Soane et al discloses a coupling agent, i.e. intermediate coating, comprising methacryloxypropyltrimethoxysilane and is considered to contain in the amount ranged from 30% to 100 by weight. (Col 6, lines 39-43) And the lens material includes thermoset resin such as acrylate resin or mixture of acrylate and urethane resin (Col 8, lines 56-66)

Regarding claims 93,94, 97, and 98, Soane et al discloses the coating has a thickness of 1 to 5  $\mu\text{m}$ . (Col 4, lines 65-67)

Regarding claim 102, Soane et al as modified above is silent as to the primer or the hard coat layer includes particles filler with an average particle size of 10 to 80 nm in diameter. However, Konishi et al discloses the material for forming the primer and hard coating layer includes particle filler with diameter of about 1 to 300 nm (Col 5, lines 50-57)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the primer or the hard coat layer includes particles filler with an average particle size of 1 to 300 nm in diameter as disclosed by Konishi et al in

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the method of Soane et al to provide improvement of surface hardness. (See Konishi et al, Col 5, lines 50-54)

6. Claims 55-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soane et al (U.S. 5,733,483) in view of Konishi et al (U.S. 5,462,806) as applied to claim 41 above, and further in view of LaLiberte et al (U.S. 4,273,809).

Mase et al as modified above by Soane et al is silent as to further post-cure the organic liquid material to ensure complete curing of the coating material. However, post-curing the optical material is well known and conventional as shown for example by LaLiberte et al. LaLiberte et al discloses a method of casting resin lenses. The method includes a post-curing the lens material by removing the partially cured lens from the mold and heating in a post cure oven at approximately 200°F or 93.33°C for one to three hours to produce desirable final polymerization of the lenses. (Col 2, lines 17-44)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to remove the partially cured lens from the mold and heating to post cure the lens material to form the final polymerized lens as disclosed by LaLiberte et al in the method of Mase et al as modified by combination of references to allow ease separation of the lens material from the mold and to prevent breakage of the molds at separation. (Col 1, lines 9-19)

7. Claims 86, 87, 95, and 96 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soane et al (U.S. 5,733,483) in view of Konishi et al (U.S. 5,462,806) as applied to claim 41 above, and further in view of Singh et al (U.S. 5,204,126).

Mase et al as modified above is silent as to the mould surface includes mold release agent in the form of a silane or fluorochemical treatment. However, providing mold with release agent by treating the surface with silane or fluorochemical is well known and conventional as shown for example by Singh et al. Singh et al discloses method of forming an ultra thin release films on the mold surfaces. The method includes forming a film with fluorinated alkyl group or silane or siloxane onto the surface of the mold surface, (Col 4, lines 48-59) and the film has a thickness of not more than 0.5  $\mu\text{m}$  or not more than 10 nm. (Col 7, lines 23-30)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide very thin silane or fluorochemical film as a release agent to the mold surface as disclosed by Singh et al in the method of Mase et al as modified by combination of references to allow the casting of the optical lenses to be easily release from the surface of the mold without damaging the lens. (Col 1, lines 50-55)

8. Claims 99-101 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soane et al (U.S. 5,733,483) in view of Konishi et al (U.S. 5,462,806) as applied to claim 41 above, and further in view of Takamizawa et al (U.S. 5,096,626).

Mase et al as modified above is silent as to the anti-reflection layers includes stack of layers with a cumulative thickness ranged from 0.5  $\mu\text{m}$  to 20  $\mu\text{m}$  or 1.5  $\mu\text{m}$  to 5  $\mu\text{m}$  with alternate high and low refractive index layers. However, providing anti-reflection layers as a multi-layers with a cumulative thickness ranged from 0.5  $\mu\text{m}$  to 20  $\mu\text{m}$  or 1.5  $\mu\text{m}$  to 5  $\mu\text{m}$  with alternate high and low refractive index layers on the first and second coating layers is well known and conventional as shown for example by



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Takamizawa et al. Takamizawa et al discloses forming anti-reflecting film as multi-layers having different indices of refraction varied in the direction of the thickness film and the thickness of the film can be adjusted by selection of a solvent or a coating method, which is considered to be any desired thickness and includes 0.5  $\mu\text{m}$  to 20  $\mu\text{m}$  or 1.5  $\mu\text{m}$  to 5  $\mu\text{m}$ . (Col 6, lines 23-37)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide anti-reflecting film as multi-layers having different indices of refraction varied in the direction of the thickness film and the thickness of the film can be adjusted by selection of a solvent or a coating method, which is considered to be any desired thickness and includes 0.5  $\mu\text{m}$  to 20  $\mu\text{m}$  or 1.5  $\mu\text{m}$  to 5  $\mu\text{m}$  as disclosed by Takamizawa et al in the method of Mase et al as modified by combination of references to provide hard coat film and anti-reflecting film with excellent adhesion between the lens and film with no defects. (Col 2, lines 5-13)

### ***Response to Arguments***

9. Applicant's arguments filed March 9, 2006 have been fully considered but they are moot in view of new ground of rejection.

10. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this case, the combination of Mase et al, Konishi et al, and Soane et al teach the instant invention.

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11. In response to applicant's argument of Mase et al and Konishi et al teach away from Soane et al since they form coatings on preformed lenses using traditional coating techniques, the examiner agrees that Mase et al and Konishi et al teach only traditional method of applying coating to a preformed lenses and Soane et al teaches forming the coating on the lenses by molding but not the traditional coating method, However, one of ordinary skill in the art would appreciate when reading the teachings of Mase et al, Konishi et al and Soane et al for forming coating onto lenses are all equivalents and the methods are interchangeable. Furthermore, the pretreatment of the lens base with alkali, plasma, or ultraviolet ray is not always required prior to coating the primer coating in the teaching of Mase et al and Konishi et al and as shown by Kawashima et al, lens with and without the pretreatment are equivalents for the adhesion of the primer coating to the lens. The combination of Mase et al, Konishi et al, Kawashima et al, and Soane et al teach the instant invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sing P. Chan whose telephone number is 571-272-1225. The examiner can normally be reached on Monday-Thursday 7:30AM-11:00AM and 12:00PM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher A. Fiorilla can be reached on 571-272-1187. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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